

REMARKS

Claims 1-3 and 5-38 are pending in this application. Claims 1-3, 5, 23-25, 27, 28 and 30 have been rejected under 35 U.S.C. §102. Claims 6-22, 29 and 31 have been rejected under 35 U.S.C. §103. Claims 26 and 32-38 have been found allowable. Upon entry of this amendment, Claims 1, 26 and 32 have been amended. Claims 39-41 have been added. No new matter has been added. Reexamination and reconsideration is respectfully requested.

Rejections Under 35 U.S.C. §102

The Examiner has rejected Claims 1-3, 5, 23-25, 27, 28 and 30 under 35 U.S.C. §102(b) as being anticipated by Otagawa et al., U.S. Patent #4,900,405. This rejection is respectfully traversed. However, to expedite prosecution of this application and pass the claims to allowance at an earliest possible date, Applicant has amended Claim 1.

As amended, Claim 1 now recites an electronic circuit for sensing an output of a sensor, the electronic circuit comprising, *inter alia*, “at least two electrode pairs . . . wherein a layout of the at least two electrode pairs minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair.” These features are not disclosed or suggested in Otagawa et al.

Otagawa et al. is directed toward electrode structures for analyzing gas and/or vapor mixtures. Otagawa et al. describes a first electrode, a second electrode and a reference electrode disposed on a substrate (Otagawa et al., Fig. 1, elements 18, 30 and 32, respectively) which are used for sensing electrochemical reactions. As can be seen in Fig. 1 of Otagawa et al., the first electrode and the second electrode are disposed adjacent each other while the reference electrode is disposed beneath the first electrode and the second electrode. Moreover, each electrode pair in Otagawa et al. is disposed adjacent another electrode pair. Thus, the layout of the electrodes in Otagawa et al. is completely different than that claimed by Applicant in amended Claim 1.

The thrust of Otagawa et al. is to position electrodes close enough together to create fast response times and to incorporate as many electrodes as possible on a substrate (See Otagawa et al., col. 9, lines 40-45: “. . . it is desirable to place the first and second electrodes as close

together as possible since the only thing then limiting the response time of the microsensor structure is the time of diffusion of the slowest moving moiety, from one electrode to the other.”). Otagawa et al. is not directed toward the minimization of cross-coupling *between electrode pairs*; indeed, with the first electrodes in Otagawa et al. disposed adjacent one another, cross-coupling between a first electrode of one electrode pair and a second electrode of another electrode pair is likely and, with an increase in electrode pair density on a single substrate, as advocated by Otagawa et al. (Otagawa et al., column 6, lines 23-29: “A first-second electrode gap 34 of generally no more than about 50 microns is advantageously present, preferably no more than about 10 microns, more preferably no more than about 5 microns and still more preferably no more than about 2 microns. Indeed, sub-micron (less than about 1 micron) gaps are particularly preferred.”), cross-coupling between electrode pairs and, consequently, between a first electrode of one electrode pair and a second electrode of another electrode pair, is likely to increase proportionately.

Thus, there are features claimed by Applicant in amended Claim 1 that are not disclosed or suggested by Otagawa et al. Accordingly, Claim 1 cannot be anticipated by Otagawa et al. Likewise, Claims 2, 3, 5, 23-25, 27, 28 and 30, which depend either directly or indirectly from Claim 1, are allowable for at least the same reasons as Claim 1.

Rejections Under 35 U.S.C. §103

The Examiner has rejected Claims 6-22, 29 and 31 under 35 U.S.C. §103. In particular, the Examiner has rejected Claims 6 and 20-22 over Otagawa et al. in view of Schulman et al., U.S. Patent #6,387,048; Claims 7, 8, 10, 13 and 19 over Otagawa et al. in view of Preikschat, U.S. Patent #3,992,665; Claims 9 and 18 over Otagawa et al. and Preikschat in view of Schulman et al.; Claims 11 and 12 over Otagawa et al. and Preikschat and further in view of Jones, U.S. Patent #4,533,986; Claims 14 and 15 over Otagawa et al. and Preikschat and further in view of Gord et al, U.S. Patent #5,999,848; Claims 16 and 17 over Otagawa et al. and Preikschat and Gord et al and further in view of Niezgoda et al, U.S. Patent #4,333,377; Claim 29 over Otagawa et al. in view of Shiraki et al, U.S. Patent Publication #US 2003/0057970; and Claim 31 over

Otagawa et al. in view of Kespohl, U.S. Patent #5,394,095. These rejections are respectfully traversed. Claims 4, 6-22, 29 and 31 depend either directly or indirectly from independent Claim 1. However, as stated above in connection with the rejections under 35 U.S.C. §102, to expedite prosecution of this application and pass the claims to allowance at an earliest possible date, Applicant has amended independent Claim 1.

As stated above, as amended, Claim 1 now recites an electronic circuit for sensing an output of a sensor, the electronic circuit comprising, *inter alia*, “at least two electrode pairs . . . wherein a layout of the at least two electrode pairs minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair.” These features are not disclosed or suggested, individually or in combination, in Otagawa et al., Kespohl, Schulman et al., Preikschat, Jones, Gord et al; Niezgoda et al, or Shiraki et al.

As stated above Otagawa et al. does not disclose or suggest the features of amended Claim 1. Moreover, Kespohl does not disclose or suggest the features of amended Claim 1. Kespohl is directed toward a sensor device for a noncontact sensor that controls moving strips of conductive material. Kespohl describes an electrode configuration wherein a first electrode (2) within the boundary of a second electrode (3) is *adjacent* a reference electrode (7). (See Kespohl, Fig. 5). There is no disclosure or suggestion in Kespohl of at least two electrode pairs having a layout that minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair as claimed by Applicant in amended Claim 1.

In addition, the Examiner cited Kespohl for the teaching that a U-shape is generally practiced in the art for minimizing interferences and cross-coupling. However, the cited sections of Kespohl only describe that “this sort of interference can be prevented by providing shielding electrodes 3 and 4 [sic, 5 corrected] whereby further capacitances are created between the electrode pairs 2 and 3 and also 4 and 5” (see col. 4, lines 29-32). However, the reason the shielding electrodes 3 and 5 are U-shaped (or C-shaped as described in Kespohl) is because the electrodes 2 and 4 themselves are U-shaped. The shielding electrodes 3 and 5 are solely described for creating a separate capacitance which would prevent a person (or other outside

forces) from having an interfering influence on an unshielded detector electrode 2 because the person is typically at ground potential (see col. 4, lines 17-28). Kespohl does not describe, teach, or suggest how to create a layout to prevent cross coupling between electrode pairs as claimed by Applicant.

Schulman et al. also does not disclose or suggest the features of amended Claim 1. Schulman et al. is directed toward an implantable sensor. The sensor may be used for glucose measurements. In Schulman et al., electrodes including a working electrode, a counter electrode and a reference electrode may be disposed on a substrate. (Schulman et al., col. 8, ll. 31-52; fig. 4C.) However, Schulman et al. does not describe electrode layout or configuration, other than to say that “a plurality of electrodes are arranged in a suitable pattern.” (Schulman et al., col. 8, ll. 46-47.). Schulman et al. does not disclose or suggest an electronic circuit comprising, *inter alia*, at least two electrode pairs having a layout that minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair as claimed by Applicant.

Preikschat also does not disclose or suggest the features of amended Claim 1. Preikschat is directed toward an electrical impedance measuring apparatus. Preikschat includes a single electrode 12. Preikschat does not disclose or suggest an electronic circuit comprising, *inter alia*, at least two electrode pairs having a layout that minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair as claimed by Applicant.

Jones also does not disclose or suggest the features of amended Claim 1. Jones is directed toward a power supply and does not contemplate electrodes. Thus, Jones does not disclose or suggest an electronic circuit comprising, *inter alia*, at least two electrode pairs having a layout that minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair as claimed by Applicant.

Gord also does not disclose or suggest the features of amended Claim 1. Gord is directed toward daisy chainable sensors and stimulator for implantation in living tissue. Gord does not describe electrode layouts. Thus, Gord does not disclose or suggest an electronic circuit

comprising, *inter alia*, at least two electrode pairs having a layout that minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair as claimed by Applicant.

Niezgoda et al. also does not disclose or suggest the features of amended Claim 1. Niezgoda et al. is directed toward a tone generation system and does not contemplate electrodes. Thus, Niezgoda et al. does not disclose or suggest an electronic circuit comprising, *inter alia*, at least two electrode pairs having a layout that minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair as claimed by Applicant.

Shiraki et al. also does not disclose or suggest the features of amended Claim 1. Shiraki et al. is directed toward a liquid component analyzer. Shiraki et al. includes a potential difference measurement plate 4 and terminals 40A-40F that work in conjunction with probes P1-P6 for making electrochemical measurements. The probes P1-P6 are disposed adjacent one another and all are disposed on the potential difference measurement plate 4. Each of the probes P1-P6 is connected to a terminal 40A-40F. (See Shiraki et al., Fig. 5.) This configuration is different than that claimed by Applicant. Shiraki et al. does not disclose or suggest an electronic circuit comprising, *inter alia*, at least two electrode pairs having a layout that minimizes cross coupling between at least one electrode of a first electrode pair and at least one electrode of a second electrode pair as claimed by Applicant.

Thus, there are features claimed by Applicant in amended Claim 1 that are not disclosed or suggested by Otagawa et al., Kespohl, Schulman et al., Preikschat, Jones, Gord et al.; Niezgoda et al., or Shiraki et al. Because there are features of amended Claim 1 not disclosed or suggested in any of these references individually, the combination of these references cannot recite all of the features of amended Claim 1. Accordingly, a *prima facie* case of obviousness has not been made over Claim 1 with respect to these references. Claim 1 is, thus, allowable over these references. Likewise, Claims 6-22, 29 and 31, which depend either directly or indirectly from Claim 1, are allowable for at least the same reasons as Claim 1.

Allowable Subject Matter

Applicant gratefully acknowledges the Examiner's recognition of allowable subject matter in Claims 26 and 32-38. Applicant has amended Claims 26 and 32 so that they are now in independent form and include all of the limitations of their base claims and any intervening claims.

Added Claims

Claims 39-41 have been added. No new matter. Claims 39-41 depend either directly or indirectly from Claim 1 and are believed to be allowable for at least the same reasons as Claim 1.

Therefore, Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit

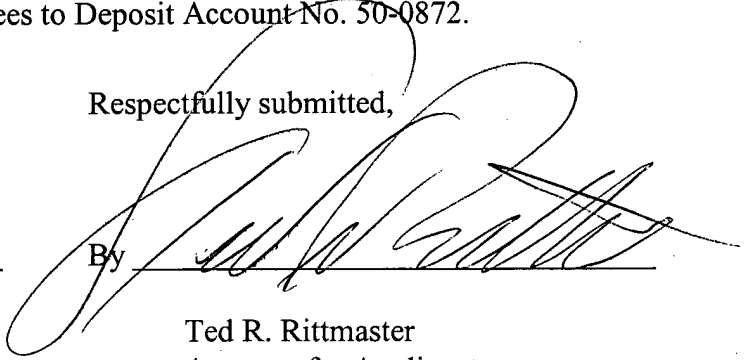
Account No. 50-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-0872.

Respectfully submitted,

Date

7/6/04

By



FOLEY & LARDNER, LLP

Customer Number: 23392

Telephone: (310) 975-7963

Facsimile: (310) 557-8475

Ted R. Rittmaster

Attorney for Applicant

Registration No. 26,257